Related work (NEED TO ADD)

*Stress Detection using Galvanic Skin Response: An Android Application (*[*https://iopscience.iop.org/article/10.1088/1742-6596/1372/1/012001/meta*](https://iopscience.iop.org/article/10.1088/1742-6596/1372/1/012001/meta)*)*

Detection of stress based on physiological signals, specifically Galvanic Skin Response (GSR), has been a subject of study due to its potential for assessing emotional states, especially stress. Navea et al.'s (2019) study presented an Android app aimed at utilizing GSR for measuring the level of stress faced while mobile texting. The app calculates skin conductance, which varies with the stimulation of sweat glands controlled by the sympathetic nervous system, thus detecting stress related to mobile texting.

Their results showed that texting on either standard or smartphone phones induces minimal stress, with phone size and texting session having small effects. The GSR app's performance was then likened to that of the commercial eSense GSR, where there were no differences in quantifying stress with the use of the two. This validated the GSR app's performance for real-time stress measurement, and it could thus be used as an effective stress-detection device.

Their findings agree with other wearable stress detection research that mobile applications can serve as easy and cost-effective tools for monitoring one's emotional state in real time.

Nonetheless, whereas the present research is specific to mobile texting, my research generalizes the application scope to a more general setting, with multi-sensor data and a low-cost, user-friendly solution that has the potential to enhance accessibility to a wider audience, including non-expert individuals.

*Stress detection in daily life scenarios using smart phones and wearable sensors: A survey (*[*https://www.sciencedirect.com/science/article/pii/S1532046419300577*](https://www.sciencedirect.com/science/article/pii/S1532046419300577)*)*

Recent developments in stress detection using smartphones and wearable sensors have enabled the measurement of stress in daily life, beyond the controlled laboratory environment. Arnrich and Cem (2019) report the incorporation of physiological sensors such as heart rate and electrodermal activity (GSR) with contextual information obtained from smartphones (e.g., location and usage patterns). They point out that the fusion of these different kinds of data renders the stress detection models not only more accurate but also more robust under realistic, everyday conditions.

The survey also touches on machine learning for stress detection automatically, with the note that both personalized models and multimodal data fusion are essential in handling individual variability in stress reaction. Challenges in translating laboratory-based techniques to daily life, such as sensor noise and user compliance, are noted by the authors, who stress the need for unobtrusive and easy-to-use systems.

This work presents a multi-sensor system integrating heart rate, GSR, blood oxygen saturation, and respiration rate into one low-cost device with an accompanying multi-user, user-friendly application. The system supports real-time and retrospective monitoring, subject-specific calibration, and emphasizes clean data visualization and education, making stress monitoring more accessible and understandable in the workplace.